

Application No. 10/731,351
Amdt. Dated Aug. 10, 2004
Response to Office Action of May 11, 2004

In the Claims:

Please amend the claims as follows:

1. (Currently Amended) A common rail fuel injection control device [[which comprises]] comprising:
 - a supply pump for pumping [[a]] fuel into a common rail; [[and]]
 - a metering valve for adjusting [[the]] a fuel pumping quantity in the supply pump, [[and in which]] wherein the metering valve is controlled to [[a base target]] an opening degree [[determined based on an engine operation state]] by a duty drive signal~~[[, wherein said duty drive signal is caused to oscillate periodically]];~~
 - means for determining a value of a base duty according to an engine operation state, said base duty associated with a base target opening degree of said metering valve;
 - means for determining a value of a final duty, said value of said final duty oscillating periodically around the value of said base duty; and
 - means for supplying said duty drive signal with the value of said final duty to said metering valve.
2. (Currently Amended) The common rail fuel injection control device according to claim 1, wherein [[the]] an oscillation range of [[said duty drive signal]] the value of said final duty is caused to change according to the engine operation state.
3. (Currently Amended) A common rail fuel injection control device comprising:
 - a common rail for accumulating a high-pressure fuel;
 - a supply pump for pumping the fuel into the common rail;
 - a metering valve for adjusting [[the]] a fuel pumping quantity in the supply pump;
 - means for detecting [[the]] an engine operation state;
 - means for detecting an actual common rail pressure;
 - means for computing a target common rail pressure based on the engine operation state; and

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means for controlling ~~[[the]]~~ an opening degree of the metering valve by a duty drive signal so that ~~[[the]]~~ a pressure difference between said target common rail pressure and said actual common rail pressure becomes zero, ~~[[the~~ control device further comprising:]]

means for determining ~~[[the]]~~ a value of a base duty equivalent to a base target opening degree of said metering valve based on said pressure difference;

means for generating ~~[[the]]~~ a value of an oscillation duty which oscillates with a constant period and a constant amplitude; and

means for determining ~~[[the]]~~ a value of a final duty which has to be applied to said metering valve by adding the value of said oscillation duty to the value of said base duty.

4. (Currently Amended) The common rail fuel injection control device according to claim 3, further comprising:

means for determining a correction coefficient based on the engine operation state; and

means for determining ~~[[the]]~~ a value of said final duty by adding ~~[[the]]~~ a value obtained by multiplying the value of said oscillation duty by said correction coefficient to the value of said base duty.

5. (Currently Amended) The common rail fuel injection control device according to claim 4, wherein said target common rail pressure and said correction coefficient are determined based on ~~[[the]]~~ an engine revolution speed, and ~~[[the]]~~ a target fuel injection quantity determined by the engine revolution speed and accelerator opening degree.

6. (Currently Amended) The common rail fuel injection control device according to claim 4, wherein said correction coefficient is set so as to assume a smaller value as ~~[[said]]~~ engine revolution speed increases and also to assume a smaller value as ~~[[said]]~~ target fuel injection quantity increases.

7. (Original) The common rail fuel injection control device according to claim 5, wherein said correction coefficient is set so as to assume a smaller value as said

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engine revolution speed increases and also to assume a smaller value as said target fuel injection quantity increases.

8. (Currently Amended) The common rail fuel injection control device according to claim 4, wherein said correction coefficient is set so as to become zero when [[said]] engine revolution speed is not less than the prescribed value and when [[said]] target fuel injection quantity is not less than the prescribed value.

9. (Original) The common rail fuel injection control device according to claim 5, wherein said correction coefficient is set so as to become zero when said engine revolution speed is not less than the prescribed value and when said target fuel injection quantity is not less than the prescribed value.

10. (Original) The common rail fuel injection control device according to claim 6, wherein said correction coefficient is set so as to become zero when said engine revolution speed is not less than the prescribed value and when said target fuel injection quantity is not less than the prescribed value.